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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,369	07/12/2006	Takashi Sasabayashi	3408.73910	7981

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CHICAGO, IL 60606

EXAMINER

LUONG, DZU D

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2871

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/550,369	Applicant(s) SASABAYASHI, TAKASHI	
	Examiner DZU LUONG	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/20/2006, 12/17/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's election without traverse of claims 1-10 in the reply filed on November 30, 2007 is acknowledged. Claims 11-18 have been canceled, without prejudice. Claims 1-10 are pending and an action on the merits is as follows.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims **1-2, 5, 7-8** are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuyoshi Kamimura (JP 06-281947).

Regarding Claim 1:

Kamimura discloses a liquid crystal display device (See at least Figs. 1-2) comprising

- a liquid crystal layer (14) and
- a pair of electrodes (common electrode and pixel electrode) for

applying voltage onto the liquid crystal installed on both sides of said liquid crystal layer,

the liquid crystal layer and pair of electrodes being sandwiched by a pair of substrates wherein: said liquid crystal layer has a section obtained by polymerizing a polymerizable compound in the presence of said liquid crystal (a degree of partitioning was formed for the liquid crystal unit cells along the lattice shape) through selective irradiation of active energy rays (UV) over the substrate surface (25b. See example 3, paragraphs 39 and 40).

Regarding Claim 2:

Kimura discloses a liquid crystal display device (See at least Figs. 1-2) comprising:

- a liquid crystal layer (14) and
- a pair of electrodes (common electrode and pixel electrode) for applying voltage onto the liquid crystal installed on both sides of said liquid crystal layer,

the liquid crystal layer and pair of electrodes being sandwiched by a pair of substrates, wherein: said liquid crystal layer has a section obtained by polymerizing a polymerizable compound in the presence of said liquid crystal (a degree of partitioning was formed for the liquid

crystal unit cells along the lattice shape) through selective irradiation of active energy rays (UV) over the substrate (25b. See example 3, paragraphs 39 and 40) surface without voltage application.

Regarding Claim 5:

Kamimura discloses a liquid crystal display device according to one of claim 1 or 2, where said liquid crystal layer shows a specific light shielding pattern (a degree of partitioning was formed for the liquid crystal unit cells along the lattice shape. See paragraph 40) caused by the alignment of liquid crystal molecules when a voltage is applied after said irradiation or irradiations of active energy rays.

Regarding Claim 7:

Kamimura discloses a liquid crystal display device according to one of claim 1 or 2, wherein a section or sections (alignment direction controlling section or sections) that show an effect to control the alignment directions caused by a polymerized liquid crystal composition obtained by the selective irradiation of active energy rays are installed on either one or both of the surfaces which contact the liquid crystal layer (liquid crystal layer contacting surfaces) (When the completed liquid crystal panel was observed, a degree of partitioning was formed for the liquid crystal unit cells along the lattice shape and good viewing angle properties were realized. See paragraphs 40 and 41 of Kamimura).

Regarding Claim 8:

Kamimura discloses a liquid crystal display device according to claim 7, wherein at least one means selected from the group consisting of protrusions (partitioning. See paragraph 40), depressions and a slit pattern (Slit 34. See at least Fig. 3) in an electrode is installed on the surface or surfaces which contact the liquid crystal layer (liquid crystal layer contacting surface or surfaces).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyoshi Kamimura (JP 06-281947), in view of Inoue et al. (US 2003/0095229 A1).

Regarding Claim 3:

Kamimura discloses a liquid crystal display device according to claim 1 or 2, but fails to disclose the second irradiation of active energy rays all over the substrate surface with voltage application.

Inoue et al. discloses a method of fabricating a liquid crystal display device, wherein after polymerizing the monomer, additional radiation is applied to the liquid crystal

composition without applying the liquid crystal driving voltage or while applying a voltage of a magnitude that does not substantially drive the liquid crystal. Therefore, it would have been at least obvious to one of ordinary skill in the art to employ the method disclosed by Inoue et al. to obtain similar advantages such as controlling the alignment of liquid crystal molecules when radiating light onto a liquid crystal composition containing a photosensitive material (See paragraph 111, lines 8-12; and paragraph 27, lines 4-7; and embodiment 2 in Fig. 33; respectively). In other words,

- a liquid crystal display device, wherein said liquid crystal layer has a section obtained by polymerization through selective irradiation of active energy rays followed by irradiation of active energy rays all over the substrate surface with voltage application

can be obtained. Thereby, it is able to achieve substantially uniform alignment of liquid crystal molecules and ensure stable operations (See paragraph 27, lines 7-9).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyoshi Kamimura (JP 06-281947), in view of Takeda et al. (US 6,661,488 B1).

Regarding Claim 9:

Kamimura discloses a liquid crystal display device according to one of claim 1 or

2, but fails to disclose the liquid crystal has a negative dielectric constant anisotropy.

Takeda et al. discloses a liquid crystal display device wherein said liquid crystal has a negative dielectric constant anisotropy (130. See at least Fig. 110, and abstract), and is aligned in the direction vertical to the substrate surface when no voltage is applied after said irradiation or irradiations of active energy rays.

Therefore, it would have been at least obvious to one of ordinary skill in the art to employ a negative dielectric constant anisotropy as disclosed by Takeda et al. to obtain higher contrast, in addition, a response speed is also higher, and an excellent viewing angle characteristic is provided for white display and black display (See column 2, lines 4-9)

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyoshi Kamimura (JP 06-281947), in view of Kubo et al. (US 2001/0055082 A1).

Regarding Claim 10:

Kamimura discloses a liquid crystal display device according to one of claim 1 or 2, but fails to disclose an arrangement of polarizers and compensators.

Kubo et al. discloses a liquid crystal display device (See at least Figs. 15A-B) wherein:

- a first polarizer (6) and

- a second polarizer (9) are installed each on one of the outer sides of said pair of substrates so that the absorption axes of the two polarizers are perpendicular to each other;
- a first 1/4 wavelength plate (7) is installed between one of said substrates and the first polarizer;
- a second 1/4 wavelength plate (10) is installed between the other one of said substrates and the second polarizer; and,

the absorption axis (perpendicular to transmission axis) of the first polarizer is at 45° from the phase delay axis of the first 1/4 wavelength plate, the absorption axis (perpendicular to transmission axis) of the second polarizer is at 45° from the phase delay axis of the second 1/4 wavelength plate, and the phase delay axis of the first 1/4 wavelength plate and the phase delay axis of the second 1/4 wavelength plate are perpendicular to each other.

Therefore it would have been at least obvious to one of ordinary skill in the art to employ the arrangement of polarizers/compensators as taught by Kubo et al. for achieving a sufficiently high contrast (See paragraph 40 ,line 4-5 of Kubo et al.)

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyoshi Kamimura (JP 06-281947) in view of Inoue et al. (US 2003/0095229 A1), and further in view Park et al. (US 2003/0147032 A1).

Regarding Claim 4:

Kamimura discloses a liquid crystal display device according to claim 3, but fails to disclose wherein at least one of said two irradiations of active energy rays has been carried out along a direction tilted from the normal to the substrate surface.

Park et al. discloses UV irradiation device, wherein the UV light source being irradiated at a tilt angle upon the substrate.

Therefore, it would have been at least obvious to one of ordinary skill in the art to employ tilted rays to obtain advantages such as the UV curable monomer can be hardened even if a light-shielding layer is formed right under a UV irradiating surface (See abstract of Park et al.).

6. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuyoshi Kamimura (JP 06-281947), in view of Lin et al. (2003/0156237 A1), and Takeda et al. (US 6,661,488 B1).

Regarding Claim 6:

Kamimura discloses a liquid crystal display device according to claim 5, wherein said specific light shielding pattern caused by the alignment of liquid crystal molecules comprises at least one pattern selected from the group consisting of a lattice pattern (Fig. 5), but fails to disclose a crisscross pattern, a pattern in the shape of stripes, a pattern in the shape of stripes with bends.

Lin et al. discloses protruding structure 134 (See Fig. 5b) has a crisscross appearance.

Takeda et al. discloses an arrangement of linear (striped) protrusions 20A-B and stripes with bends 20A-B as shown in Figs. 69A and 71, respectively.

Therefore, it would have been at least obvious to one of ordinary skill in the art to employ shapes disclosed by Lin et al. and Takeda et al. for improving the viewing angle performance in the VA LCD (See column 3, lines 29-30 of Takeda et al.)

Conclusion

9. The prior arts made of record and not relied upon is considered pertinent to applicant's disclosure:
 - a) Nakanishi et al. discloses a liquid crystal display in which a polymeric component included in a liquid crystal layer is polymerized while adjusting a voltage applied to the liquid crystal layer to regulate the direction of alignment of liquid crystal molecules during polymerization.
 - b) Yoshida et al. discloses a liquid crystal display device includes a liquid crystal cell, polarizers, a first retardation plate arranged between the liquid crystal cell and the first polarizer, and a second retardation plate arranged between the liquid crystal cell and the second polarizer.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzu Luong whose telephone number is 571-270-3102. The examiner can normally be reached on Monday-Friday 8:00 AM - 5:00 PM

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EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID NELMS can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dzu Luong

February 15, 2008

/Dung Nguyen/

Primary Examiner, Art Unit 2871